

Patent Claims

1. Piston pump with a pump casing (1, 2, 3) and a piston (4) that narrows the working chamber (a) in a pump cylinder (5) by an elevating motion characterised in that the piston (4) borders the working chamber (a) in the pump cylinder (5) at two sides with its upper and lower front surface and that the working chamber (a) is connected by one positively controlled inlet valve (14, 16) and by one positively controlled discharge valve (10, 12) that open and close respectively, each alternating, after reaching the two end positions of the piston (4) for respectively filling and ejecting the working volume.
2. Piston pump according to Claim 1 characterised in that the inlet valves (14, 16) and the discharge valves (10, 12) are connected by a lever system (19, 22, 25, 28, 31) to the piston (4) in such a manner that after reaching one of the extreme positions of the piston (4), the inlet valve (14) and the discharge valve (12) open and the inlet valve (16) and the discharge valve (10) close respectively, which is mandatory in each case, and after reaching the other extreme position of the piston (4), the inlet valve (14) and the discharge valve (12) close and the inlet valve (16) and the discharge valve (10) open, mandatory again, respectively.
3. Piston pump according to Claim 1 or 2 characterised in that the two inlet valves (14, 16) and the two discharge valves (10, 12) respectively are located laterally reversed at each valve rod (11, 15).
4. Piston pump according to one of the preceding claims characterised in that the valve rods (11, 15) pierce valves (14, 10), the pump casing (3) and the valve lid (8) on one side and are connected at the end by a compensator (19) whose one end is

elongated and movably connects the valve rods (11, 15) to the conveying lever (25) through a plate (22).

5. Piston pump according to one of the preceding claims characterised in that a cylinder (36) with loaded pistons whose piston rod (35) pierces the cylinder (36), is connected to the pump lid (2) by a propelling lever (31) and that this propelling lever (31) movably incorporates a propelling rod (28) in the region between its end pivotal points which is movably connected at the other end to a conveying lever (25).

6. Pump piston according to one of the preceding claims characterised in that the pump casing (1) has three bores (a, b, c) that lie in an axis, whereby one bore (a) forms the working chamber and the other two bores (b, c) each with a cross hole, form the inlet and discharge channels respectively in such a manner that during pump operation the inlet valves (14, 16) and discharge valves (10, 12) respectively, alternating with the elevating motion of the piston (4), respectively close and open the bores (b, c) at one end.

7. Pump piston according to one of the preceding claims characterised in that the valve rods (11, 15) have a screw 1hread with nut (13, 17) at the end of that side that faces the pump lid (2) and by screwing in or screwing out of which, the distances of the valve pairs (10,12 and 14, 16 respectively) that are located laterally reversed is reduced or increased for clearance adjustment.

8. Piston pump according to one of the preceding claims characterised in that two or a larger number of piston pumps can be driven synchronously by coupling their propelling levers (31, 40) to a common piston rod.

9. Piston pump in accordance with Claim 8 characterised in that the pumps to be coupled should preferably lie vertically one over the other in such a manner that the

propelling rods (28, 44) can be connected directly to the cylinder (36) lying under it, whereby all pumps have a common propulsion at their disposal.

10. Piston pump in accordance with Claims 8 and 9 characterised in that the discharge stroke can be individually modified for every coupled pump by moving its propelling rod (28, 44) to its propelling lever (31, 40).